

# A Plus Industries Ltd.

Plot-28, Sec-7, Milk Vita Road, Mirpur, Dhaka; Bangladesh  
(23.820062N, 90.359582E)  
10 December 2013



# Observations

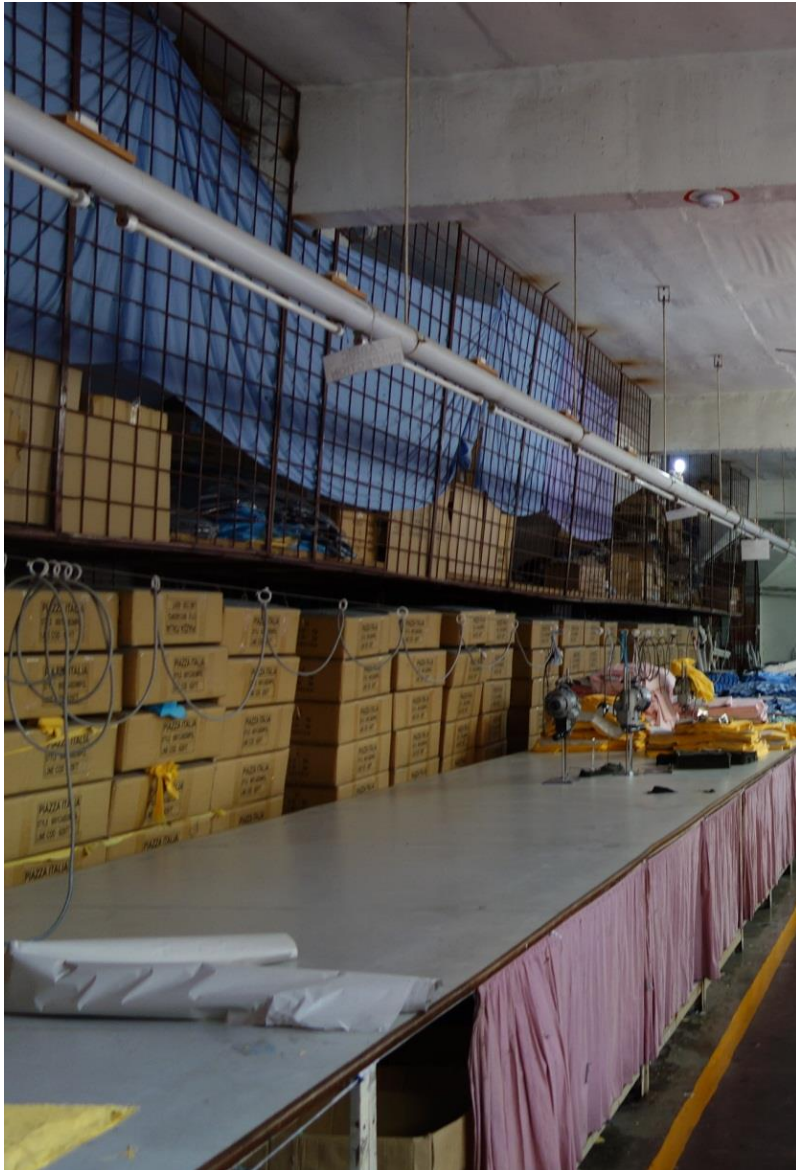
# Inclined cracks on side beams



**Inclined cracks**  
Monitor cracks on beams. Conduct regular inspection of cracks. Investigate if cracks are only in the plastering.

## Inclined cracks

# **Non engineered steel structure for additional mezzanine above ground floor**



## Lightweight steel mezzanine non engineered

Connections not designed

Connections executed improperly

Additional not designed elements have been added according to what has been needed

# Leaking water causing damage and corrosion



Running water visible.  
Unmanaged leaking drainage causing  
corrosion to façade and structure.  
Spalled concrete on column. Column  
rebars exposed

## Leaking water



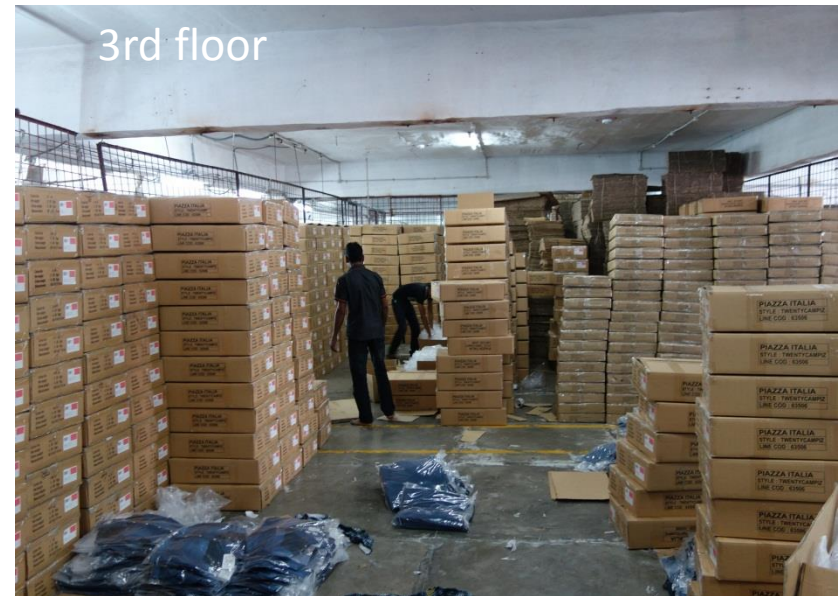
Leaking from roof and washrooms causes constant wetting causing corrosion and spalling.

Local concrete spalling caused by corrosion of lower reinforcement bars.



**Leaking water**

# High loads on bonded/storage areas on roof



Building designed for factory/commercial use. Live load assumed 3.0 kPa  
Plan and height restrictions to be introduced to prevent future overloading.  
Limit stack height to 1.80 m (1.50x1.50 area) and keep 0.60-0.75 m cleared strip around.

## Floor loading

# Non engineered steel structure on roof



## Non Engineered steel structure on roof

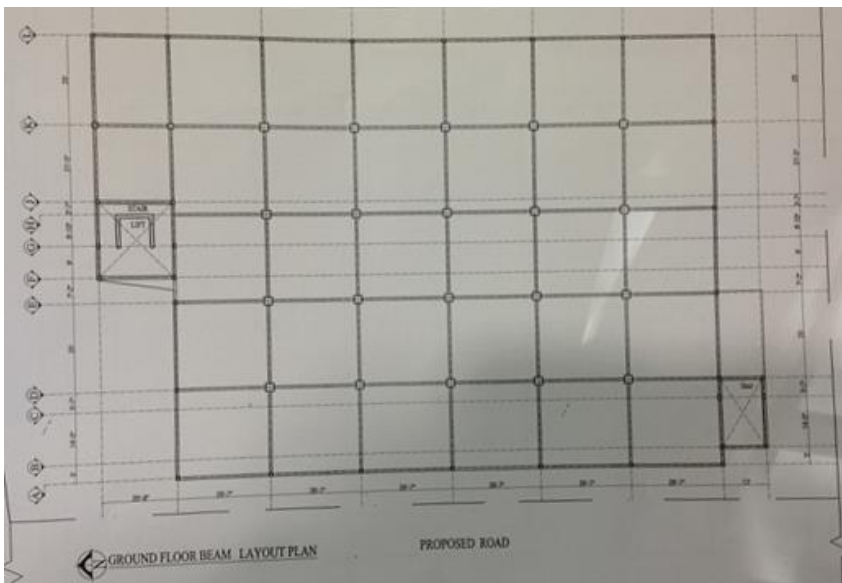
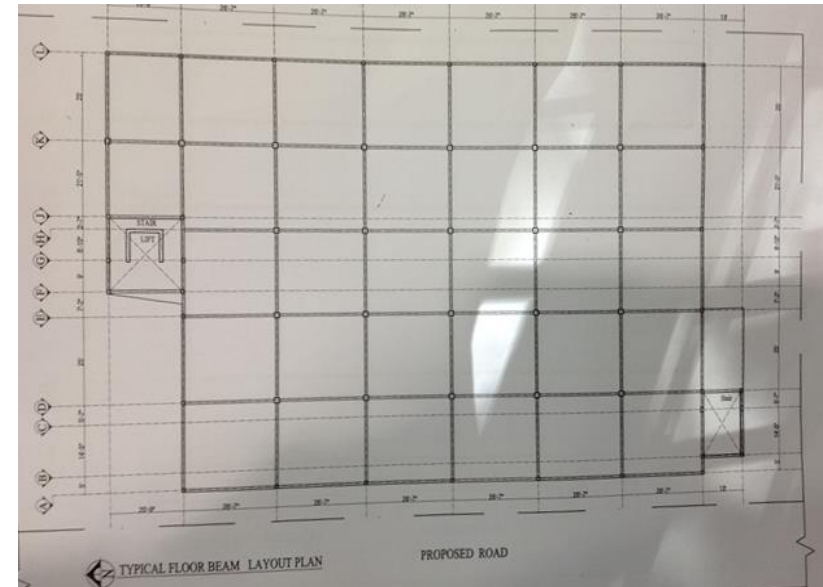
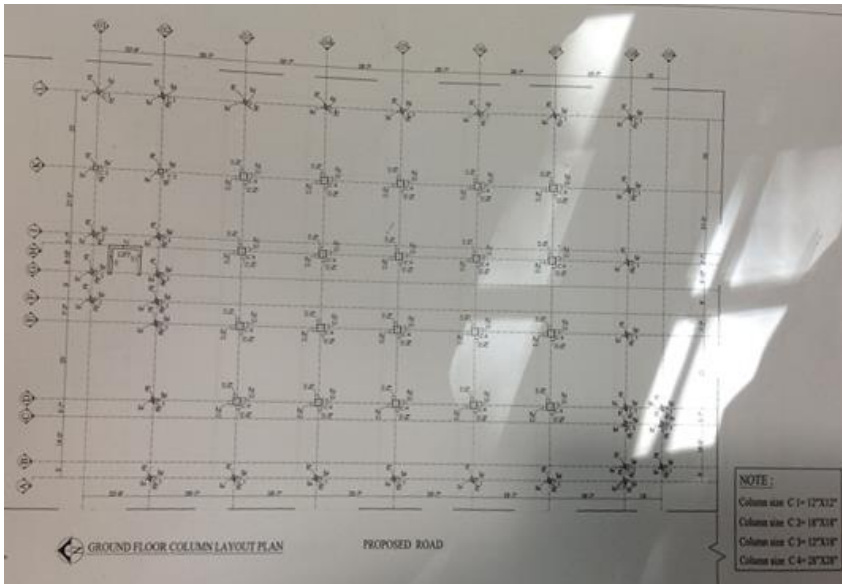
Structure without bracing.

Connections not designed, executed Improperly and supported on cantilever ends and parapets at cantilever ends.



## Non engineered structure

**Structural drawings are not completed**



Structural drawings are not completed, only geometry drawings and layout were shown for the concrete structure.

No information about the metal roof structure.

## Structural drawings

# Priority Actions

# Problems Observed

**ITEM 1:** Concrete strength in columns

**ITEM 2:** Inclined cracks on side beams near supports in some located areas

**ITEM 3:** Non engineered steel structure for additional mezzanine above ground floor

**ITEM 4:** Leaking water causing damage and corrosion

**ITEM 5:** High loads on bonded/storage areas on roof

**ITEM 6:** Non engineered steel structure on roof

**ITEM 7:** Structural drawings are not completed

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Concrete strength in columns	Maintain current use of the floors and don't change use or increase occupation, either of which could increase loading.	Immediate - Now
2	Concrete strength in columns	Factory Engineer to review design, loads and columns stresses in area identified above.	Immediate - Now
3	Concrete strength in columns	Verify insitu concrete stresses either by cores or existing cylinder strength data for cores from 4 columns.	Immediate - Now
4	Concrete strength in columns	A Detail Engineering Assessment of Factory to be commenced, see attached Scope.	Immediate - Now
5	Concrete strength in columns	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	6-weeks
6	Concrete strength in columns	Detail Engineering Assessment to be completed.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
7	Concrete strength in columns	Continue to implement load plan	6-months
8	Inclined cracks on side beams near supports in some located areas	Monitor cracks on beams. Conduct regular inspection of cracks. Investigate if cracks are only in the plastering.	6-months
9	Inclined cracks on side beams near supports in some located areas	If cracks grow larger, removing all items above the slab and close working areas below the affected areas . Engage an engineer to investigate, repair and strengthen the beams.	6-months
10	Non engineered steel structure for additional mezzanine above ground floor	Addition structures should be designed and upgraded to support code loads by the building Engineer, or they should be vacated and removed.	6-months
11	Leaking water causing damage and corrosion	Building engineer to inspect slabs in room near washrooms.	6-weeks
12	Leaking water causing damage and corrosion	Manage drainage from above levels to downpipes to avoid structural corrosion due to continuous moisture.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
13	Leaking water causing damage and corrosion	Mitigate water source from washrooms and roof. Manage drainage, waterproof system and isolating layer.	6-months
14	Leaking water causing damage and corrosion	If required, specify a treatment system for corrosion and concrete repair	6-months
15	High loads on bonded/storage areas on roof	Building's Engineer to ensure the structure is not loaded beyond capacity. We recommend limit stack height to 1.80m (1.50x1.50m area) and keep 0.60-0.70 m cleared strip around. Limit height to 1.80 m for loose clothing.	6-months
16	High loads on bonded/storage areas on roof	Building Engineer to create controlled loading plans for all floors	6-months
17	Non engineered steel structure on roof	Building engineer to check the structure and its supports and propose additional reinforcements and stability system.	6-months
18	Structural drawings are not completed	Building engineer to check, collect information and produce accurate and complete as-built documentation soonest.	6-months